1: Immunity 1999 Nov;11(5):625-36

Dendritic cells require T cells for functional maturation in vivo.

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We examined dendritic cell (DC) status in SCID and RAG2 -/- mice to assess the influence of T cells on DC development and function in vivo. These mice have reduced numbers of DC in the epidermis and lymph nodes draining hapten-sensitized skin. Epidermal DC in these mice were defective in presenting antigen in vivo to adoptively transferred, hapten-sensitized T cells from normal mice. Likewise, draining lymph node DC were deficient in their capacity to stimulate naive T cells in vitro and in vivo. DC numbers as well as the impaired ability to present antigen in vivo, were corrected by reconstituting these animals with normal T lymphocytes, suggesting that T cells are crucial for normal DC maturation and function in vivo.

PMID: 10591187 [PubMed - indexed for MEDLINE]

1: Clin Exp Allergy 1999 Feb;29(2):271-9 Related Articles, Books, LinkOut

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Epicutaneous administration of hapten through patch application augments TH2 responses which can downregulate the elicitation of murine contact hypersensitivity.

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BACKGROUND AND OBJECTIVE: Allergic contact dermatitis and its animal model, contact hypersensitivity (CHS), have long been documented as type 1 T-cell-predominant immune responses. Although type 1/type 2 T-cell deviation has been repeatedly demonstrated to play an important role in many human diseases and their animal models, the potential of tilting type 1/type 2 T-cell differentiation of CHS by modulating the manner of administration and dosage of hapten remains unexplored. This study examined the effect of these two factors on type 1/type 2 balance of CHS. METHODS: ELISA methods for detection of isotypes of hapten-specific antibodies and cytokine profiles of in vitro reactivation culture as well as ear-swelling assay were used to indicate type 1 or type 2 T-cell immune responses. RESULTS: In this paper, it was demonstrated that dosage of hapten has no effect on the type 1/ type 2 T-cell balance of CHS, whereas epicutaneous administration of hapten through patch application could tilt the type 1/type 2 balance to decrease type 1 and to augment type 2 T-cell responses. Patch application-induced modulation is still effective in ever-sensitized mice and the augmented type 2 T-cell responses are persistent and increase progressively in strength after repeated immunizations. Moreover, it was demonstrated that the augmented type 2 T-cell response can downregulate the elicitation of CHS. The major mediating cells of the enhanced type 2 T-cell responses were determined to be CD4+ T cells (TH2 cells). CONCLUSIONS: These data show that epicutaneous administration of hapten through patch application augments TH2 response which can downregulate the elicitation of murine CHS. This exploration may contribute to the understanding of regulatory mechanisms involved in contact allergy.

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Localization of antibody-forming cells in draining lymphoid organs during long-term maintenance of the antibody response.

Donaldson SL, Kosco MH, Szakal AK, Tew JG.

Previous studies on the "spontaneous antibody response" have included in vitro steps and it is possible that the response is an in vitro artifact. The objective of the present study was to induce a spontaneous antibody response entirely in vivo and determine if the response is localized and if the magnitude of the response is related to the location of persisting antigen. Antigen was injected into the right hind footpads of mice, and lymph nodes on the right side were draining and lymph nodes on the left side were controls. Antibody-forming cells (AFCs) were enumerated in both draining and nondraining nodes 2 weeks, 2 months, and 1 year after secondary immunization. Four days prior to determining AFC number, the mice were severely bled to stimulate AFC production. Thousands of AFCs were found in the draining lymph nodes and the numbers were dramatic in nodes closest to the injection site that retain the most antigen. In contrast, the vast majority of nondraining nodes lacked any AFCs. One year after immunization, the response was almost exclusively in the popliteal node, draining the foot where antigen was administered a year earlier. These results are consistent with previous data on the spontaneous response and support the hypothesis that antigen retained on FDCs is essential in the maintenance of serum antibody levels.

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High titre anticytokine antibodies obtained by intralymphnode immunization with low amounts of antigen.

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Intralymphnode immunization was performed on rabbits to obtain anticytokine antibodies using low or very low amounts of the following purified cytokines: CSF-1 (or M-CSF: 10, 2 or 0.2 microgram/injection), GM-CSF (10 micrograms/injection), IL-2 (10 micrograms/injection) and HILDA/LIF (10 micrograms for the first injection and 5 micrograms/injection for boosts). This technique is easily performed by dissection of the popliteal lymphnode. Specific high titre antibodies were obtained after the first or second boost for antigen doses between 10 (for all cytokines tested) and 0.2 microgram (for CSF-1) per injection. In most cases, these antibodies could be used for immunoprecipitation, competition assays, dot immunoblotting, neutralization of biological activity and receptor binding inhibition. Some applications show that these tools are useful for cytokine research projects. For newly identified cytokines available in limited amounts, this method of obtaining specific polyclonal antibodies is an interesting alternative to the expensive, time-consuming and technically more demanding monoclonal antibody method.

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The production of polyclonal and monoclonal antibodies in mice using novel immunization methods.

Hong TH, Chen ST, Tang TK, Wang SC, Chang TH.

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Two novel immunization methods (intrasplenic and intra-inguinal lymph node) have been developed for the production of polyclonal and monoclonal antibodies in mice. Freund's complete adjuvant and antigen were mixed in the ratio of 1:2 (v/v). Various concentrations of human serum albumin (HSA) were used as antigen. No primary immune response was induced with 0.1 microgram of HSA in either of the methods studied. Intrasplenic immunization resulted in the strongest primary immune responses using all other doses of HSA. The primary immune response induced by intrasplenic immunization with 0.5 microgram of HSA was higher than any response induced by subcutaneous immunization with various doses of HSA. Inguinal lymph node immunization was less effective than intrasplenic immunization but better than subcutaneous immunization with 1-50 micrograms of HSA. Comparisons were also made of the efficacy of different adjuvants when inducing primary immune responses with 1 microgram of HSA. Freund's complete adjuvant resulted in a much stronger response than Freund's incomplete adjuvant and alum. Both intrasplenic and inguinal lymph node immunization using 1-5 micrograms of HSA were able to induce strong primary immune responses. Secondary immunization with either method or intravenous injection 3 days before fusion resulted in a higher frequency of specific monoclonal antibodies.

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